

## NATURAL RESOURCES CONSERVATION SERVICE CONSTRUCTION SPECIFICATIONS

### FILTER STRIP

#### 1. Scope

The work shall consist of furnishing all materials and placing them on all designated areas to the limits as shown on the drawings, or as staked in the field, and performing cultural operations to establish a filter strip. Procedures, technical details, and other information listed provide additional guidance for carrying out selected components of this practice. This material supplements the requirements and considerations therein.

#### 2. Specifications

Filter strips shall be a minimum of 30 feet and no more than 120 feet in flow length. The design width shall be determined to the extent needed to meet the primary purpose of the practice and the producer's objectives.

To maintain sheet flow into the filter strip without additional water spreading applications, the contributing area will not have a slope length exceeding:

Slope	Slope Length
1 to 3 percent	300 feet
3 to 6 percent	200 feet
Greater than 6 percent	100 feet

Minimum design flow length will be computed as a 3:1 ratio of contributing area to filter strip flow length (i.e., 300 feet) contributing area slope length would require a minimum of 100 feet of flow length across the filter strip.

When designing adjacent to watershed flood control structures or other surface water reservoirs with fluctuating water levels, the filter will be designed above the elevation that would be inundated during a 10-year, 24-hour frequency storm. The filter flow length will also continue from the design storm elevation to the crest of inlet of the structure. The maximum flow length will be the design filter flow length plus the distance between the design storm elevation to the crest of inlet of the structure.

#### 3. Vegetation

The filter will be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes, and/or other forbs adapted to the local conditions.

Species selected should be adapted to the conditions and pollutants the filter is being designed for. For seeding design, rates and seedbed preparation refer to Conservation Practice Standards 512, Pasture and Hay Planting; and 550, Range Planting; or if the site has a predicted erosion rate exceeding two times the tolerable soil loss (T), refer to Conservation Practice Standard 342, Critical Area Planting.

Plant characteristics may be reviewed at <http://plants.usda.gov/>.

#### 4. Setback Zones for Wells, Surface Water Inlets, and Surface Water Systems

When the filter strip is being designed to serve as a set back zone for potential pollutants, the minimum flow length will be 30 feet unless specified by product labels, local, state, or federal regulations.

For atrazine-containing products, flow length will be a minimum of 50 feet from all wells, including abandoned wells, drainage wells, and sinkholes for ***mixing, loading, or application areas***. When designing as a filter between ***mixing and loading areas*** and any intermittent stream, river, or natural or impounded reservoir, the minimum flow length will also be 50 feet.

***For application areas***, the minimum flow length will be 66 feet at points where field run-off enters perennial or intermittent streams or rivers.

The minimum design flow length will be 200 feet when adjacent to natural or impounded lakes or reservoirs where atrazine-containing products are ***being applied***. Farm ponds are exempt if the water is not used for drinking water, and if the location is wholly on the owner's property and the discharge is not conveyed directly to a perennial or intermittent stream or river.

## **5. Wildlife Food and Cover Enhancement**

When wildlife food and cover is a secondary purpose for applying the filter strip practice, the minimum width will be 30 feet. Increased widths provide higher quality wildlife habitat. Plant species diversity will also increase quality.

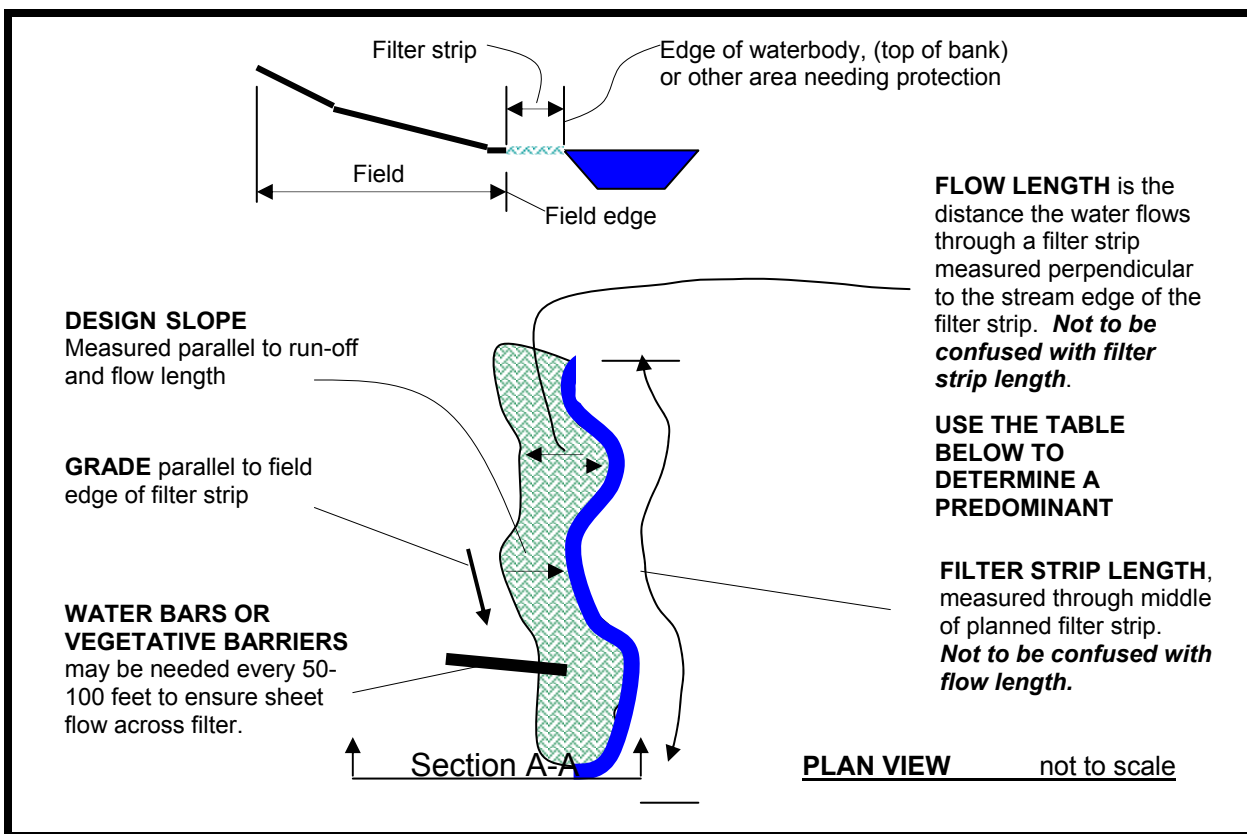
## **6. Required Documentation**

- Form KS-ECS-393, Filter Strip
- Form KS-ECS-4, Grass Seeding
- Aerial photo or detailed sketch identifying practice location

## **7. Operation and Maintenance**

Refer to Agronomy Technical Note KS-42.

### PLAN VIEW AND SECTION A-A, DESIGN COMPONENTS



Filter Strip Design Flow Lengths in feet

Contaminant Trapping Criteria	Average Design Slope					
	0.5%	1.0%	2.0%	3.0%	4.0%	5.0% or greater
<b>Sediment, Minimum Allowable*</b> (Minimal level of sediment trapping)	30	30	30	30	30	30
<b>Sediment, Preferred*</b> (15 minute flow through time, 75-95 percent effective)	50	70	100	120	120	120*
<b>Soluble Contaminant, Minimum Allowable*</b> (Minimal dissolved contaminant trapping)	30	30	30	30	30	30
<b>Soluble Contaminant, Preferred*</b> (30 minute flow through time, 50-75 percent effective)	100	120	120*	120*	120*	120*

Note: It is difficult to maintain sheet flow for distances greater than 120 feet through the filter strip. Once sheet flow has converted to concentrated flow, the effectiveness of the filter is reduced. Filter strips wider than 120 feet often will require additional practices such as spreader ditches, level berms, vegetative barriers, or other grade control practices to be installed at the field/ filter strip edge and/or within the filter strip at critical locations.

\* When determining flow lengths for both sediment and soluble contaminants do not add the two together. The required flow length for soluble contaminants will also be effective for trapping sediment.